



K News from KSU Animal Sciences

↳ **State Livestock Nominations due June 15-** All small livestock and commercial heifer state nominations are due June 15. This includes commercial breeding heifers, market swine, commercial breeding gilts, market lambs, commercial breeding ewes, and ALL meat goats. Animals must be submitted online by this date, as well as the completed and signed official DNA envelopes being postmarked. Families also need to submit a copy of their receipt showing the list of all animals that were entered in the system for their family.

Although both state shows now have a breeding doe show, there is not a separate division for registered breeding does. So all meat goats must be nominated in order to be eligible to show. Families must submit the animals under each child within the family for all kids to be eligible to show the animal. All youth must also sign the DNA envelope for each animal. Family nominations are still being honored; families just enter them under each kid online and make sure everyone signs the envelopes. Gilts, ewes, and does may be dual nominated in the market and breeding divisions by entering the animal as market and then sliding the dual nomination checkbox to “yes” in the online system. However, only one DNA envelope needs to be submitted, as it is the same animal.

The 2023 state livestock information is available from the KSU Youth Livestock Program website (www.asi.k-state.edu/research-and-extension/youth-programs). No paper forms will be accepted this year; all nominations must be submitted online. Several resources are available to guide families in successfully completing their nominations, including the Rookie Guide and Zoom session recordings. All families are also encouraged to use the specie checklist as a guide to ensure their nominations are complete upon submission. There should NOT be a single exhibitor signature DNA, or animals only entered under one kid online, unless there is only one child eligible to exhibit within the family. Once the first animal nomination is entered for each child, the system will prompt users to upload the child’s YQCA certificate and Declaration Form. They must be done at the same time, so families need to have these documents ready before they start. Once the documents box is closed, there is not a way to submit the required documents in the system. YQCA certification must be completed at the time of nomination. Youth who only have registered breeding females will submit this information for each show at the time of show entry.

Ear notches are also required for swine nominations and full scrapie tag numbers are required for sheep and goats. The scrapie tag number must include the Flock ID and individual animal number (example: KSS0035 16121). Nominations received without this information will be considered incomplete and returned to the family for completion. Resources on reading ear notches and submitting scrapie tag numbers are available on the website. Confirmation letters will be sent to families once their DNA envelopes are received and nominations have been processed. The reports will be updated on the KSU Youth Livestock Program website periodically until we reach the deadline, then more frequently after that. Families are encouraged to use one of these options to verify their nominations. For more information, contact Lexie Hayes (adhayes@ksu.edu or 785-532-1264).

After nominations are submitted online through creating nomination entries, the signed DNA envelopes need to be postmarked by June 15. This is a firm deadline, no exceptions.

Extension agents approve nominations online, using their credentials.

REMINDER - A complete nomination does NOT constitute show entry. The Kansas State Fair Grand Drive entries will be available once nominations close. The link to entry will be available on the Grand Drive website (<https://www.kansasstatefair.com/p/competitions/2020-special-edition-4-h--ffa-grand-drive>) and KJLS (<https://kjls.org/>) will release entry information to agents and through its website later this summer. State Fair Grand Drive entries will be due July 15, with KJLS entries due August 15. Animals that are nominated, but do not follow the appropriate entry processes set forth by each show, will not be permitted to show. Families will login and submit their show entries using the same exhibitor accounts they did to nominate – including exhibitor name and password. For nomination questions, please contact Lexie Hayes at adhayes@ksu.edu. Questions regarding show rules or entries should be directed to each specific show (KSF Grand Drive 620-669-3623 or KJLS 316-706-9750.)

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June 2023



UPCOMING EVENTS...

- ✦ **K-State Animal Science Leadership Academy (KASLA) Program** will offer one session on June 21-24. The goal of this academy will be to further develop young leaders within the livestock industry and prepare them for a successful future in this field. The four-day session will focus on increasing knowledge of Kansas' diverse livestock industry, as well as building participants' leadership skills. For questions about the academy, visit www.asi.ksu.edu/KASLA or contact Sharon Breiner, Director (sbreiner@ksu.edu or 785-532-6533.)
- ✦ The **2023 Dr. Bob Hines Kansas Swine Classic** is scheduled for June 30-July 1 at the Riley County Fairgrounds in CiCo Park in Manhattan. This two-day event includes an educational swine skillathon, photography contest, showmanship, and a prospect and market hog show. It is open to all Kansas youth ages 7-18 as of January 1, 2023. Online entries are required at www.asi.ksu.edu/swineclassic. Checks to accompany entry receipt must be postmarked by June 15, 2023. Outlined below is a schedule of this year's program.
- Friday, June 30
- 8:30 a.m. Barn open for arrival
 - Noon All pigs in place
 - 1 p.m. Swine photo check-in by the show ring
 - 1 – 3 p.m. Skillathon in the show ring
 - 4 p.m. Ice cream party by the show ring
 - 5:30 p.m. Showmanship contests
- Saturday, July 1
- 8 a.m. Prospect Pig Show followed by Barrow and Gilt Market Pig Show
- Watch the youth livestock website, the KSU Swine website and Facebook for the latest details! For more information, contact Joel DeRouchey (785-532-2280 or jderouch@ksu.edu) or Lexie Hayes (785-532-1264 or adhayes@ksu.edu.)
- ✦ **Save the Date - Livestock Sweepstakes**- The 2023 Kansas 4-H Livestock Sweepstakes is scheduled for August 19-20 on the K-State campus in Manhattan, KS. The Sweepstakes event includes the state 4-H livestock judging contest, meat judging contest, livestock skillathon, and livestock quiz bowl. Rules and entry details will be released to extension offices soon and then be made available on the 4-H Livestock Sweepstakes tab of the youth livestock program website. The deadline to enter will be August 1. All entries must be made by local Extension Units using the link provided directly to agents and KSRE staff. For more information, contact Lexie Hayes (785-532-1264 or adhayes@ksu.edu.)
- ✦ **Livestock Projects Sold through County Fair Premium Auctions**-As we enter summer, it will be county fair season before we know it. This is a reminder that livestock animals sold through a county fair premium sale OR ribbon auction are not eligible to be shown at the Kansas State Fair or the Kansas Junior Livestock Show. This is per the Kansas 4-H Policy, section 10.6. So, please refer to the policy guide on the state 4-H website for further details about the policy. As counties wrap up their county fairs, a list of the STATE NOMINATED animals that participated in the premium auction needs to be submitted. We only need the state nominated animals, not the entire sale bill/ribbon auction list. Please just email the official KSU nomination family name, member, specie, and tag #s. A list of animals state nominated from each county may be found on the state livestock nomination reports posted on the KSU Youth Livestock Program website: www.asi.k-state.edu/research-and-extension/youth-programs/nominated-livestock/check-nominated-livestock.html. This list includes official KSU nomination family names and tag numbers. For more information, contact Lexie Hayes at adhayes@ksu.edu or 785-532-1264.
- ✦ **Make plans to attend Cattle U on July 11**- Cattle U is a one-day free event sponsored by *High Plains Journal* at the Hilton Garden Inn in Manhattan KS. This event includes educational sessions, networking opportunities, an industry panel and demonstrations. Presenters include Jason Warner, Matt Perrier, Phillip Lancaster, Cross Country, Midwest Meats, JCCC and others. The event is free to attend and includes a meal. Pre-register for this event by June 23. For more information visit cattleu.net.
- ✦ **K-State Dairy: Planning for the Future**- Preparing for the future, the Kansas State University Dairy Teaching and Research Center (DTRC) is restructuring its cow herd and management strategy. Today DTRC is home to approximately 250 lactating Holstein cows primarily used for teaching students, research and providing important information to the industry. As the unit works toward its goal, it is necessary to temporarily reduce herd size. For more information, visit <https://www.asi.k-state.edu/about/news/dairy.html>.
- ✦ **KLA/KSU Field Days Schedule**- Dates have been set for the 2023 KLA/Kansas State University Ranch Management Field Days. Mushrush Red Angus will host the first event August 10 in Chase County. The August 17 field day will be held in Thomas County at Carpenter Cattle Company. Each event will begin at 3:30 p.m. and include presentations on the history of the host operation and management practices used today, as well as educational sessions and a complimentary beef dinner. The Farm Credit Associations of Kansas and Huvepharma are sponsoring both events. For more information, visit <https://www.kla.org/news-center/news-releases/news/details/33987/klaksu-field-days-scheduled-for-august>.

UPCOMING EVENTS...

- ✦ **Kansas Ag Growth Summit**- The Kansas Department of Agriculture will host the eighth annual Kansas Governor's Summit on Agricultural Growth on **Thursday, August 17, 2023**, at the Manhattan Conference Center, 410 S. 3rd Street in Manhattan, KS. The Summit involves Kansas farmers, ranchers, and agribusinesses working together in a collaborative setting to discuss growing the agriculture industry in Kansas. We welcome producers, business owners, ag educators, community leaders, and representatives of ag organizations from across the state to join us to talk about how we can work together to expand opportunities for Kansas agriculture. The annual Ag Growth Social will be the evening of August 16. Both the Social and the Summit are FREE, but pre-registration is requested. For more information visit <https://agriculture.ks.gov/aggrowthstrategy/ag-summit-2023>.
- ✦ **KSU Beef Stocker Field Day** is scheduled for Thursday, September 28 at the KSU Beef Stocker Unit. The registration details and a complete schedule will be posted at asi.ksu.edu/stockerfieldday. For more information contact Dale Blasi (dblasi@ksu.edu or 785-532-5427.)
- ✦ Watch for more details coming soon on the **2023 ASI Family and Friends Reunion**. This years date is Saturday, October 7 at the Stanley Stout Center. This year we will be honoring Dr. Larry Corah with the Don L. Good Impact Award. Make plans now to attend. Visit asi.ksu.edu/familyandfriends for more information.
- ✦ **Farm Manager – Dairy Unit (Job # 512167)** – This is a full-time, unclassified professional staff, term contract position. The KSU Dairy Teaching and Research Center (DTRC) exists to support the dairy teaching, research, and extension missions of the Department of Animal Sciences and Industry. The Farm Manager is responsible for the day-to-day management of the personnel, animals, and unit facilities and equipment in a manner that properly supports the teaching, research, and extension missions. Incumbent functions as the manager of the Dairy Teaching and Research Center and is responsible for ensuring the safety of the cows and other dairy unit employees. Incumbent is responsible for 260 mature cows, 260 replacement animals, 8 full-time employees, and 15-20 undergraduate student employees. Incumbent is responsible for purchasing feed and supplies for the unit. Review of applications begins immediately and continues until the position is filled. For more information, contact Mike Brouk, Search Committee Chair, at mbrouk@ksu.edu or 785-532-1207. To apply, go to <https://careers.pageuppeople.com/742/cw/en-us/job/512167/farm-manager>.
- ✦ **Animal Technician II - Dairy Unit (Job # 512403)**- This is a full-time, University Support Staff (USS) position. This position exists to operate and maintain the feed mill facility and feed the milk herd at the Dairy Teaching and Research Center. Review of applicants begins immediately and continues until the position is filled. For more information, contact Mike Brouk, Search Committee Chair, at mbrouk@ksu.edu or 785-532-1207. To apply, go to <https://careers.pageuppeople.com/742/cw/en-us/job/512403/animal-technician-ii>
- ✦ **Animal Technician II – Dairy Unit (Job #510744)** – This is a full-time, University Support Staff (USS) position. This position exists to milk, feed, and provide care of Dairy Teaching and Research Center (DTRC) dairy herd, which is used for teaching and research purposes. Review of applications begins immediately and continues until the position is filled. For more information, contact Mike Brouk, Search Committee Chair, at mbrouk@ksu.edu or 785-532-1207. To apply, go to <https://careers.pageuppeople.com/742/cw/en-us/job/510744/animal-technician-ii>.
- ✦ **Animal Technician II – Dairy Unit (Job # 513849)** – This is a part-time, University Support Staff (USS) position. This position exists to milk, feed, and provide care of Dairy Teaching and Research Center (DTRC) dairy herd, which is used for teaching and research purposes. This is an **AS NEEDED** position. The incumbent could be called to fill in for Emergency situations, 24 hours a day 7 days a week. Review of applications begins immediately and continues until the position is filled. For more information, contact Mike Brouk, Search Committee Chair, at mbrouk@ksu.edu or 785-532-1207. To apply, go to <https://careers.k-state.edu/cw/en-us/job/513849/animal-technician-ii>.

CALENDAR OF UPCOMING EVENTS

Date	Event	Location
June 15, 2023	Kansas State 4-H Horse Judging Contest	Salina, KS
June 15-17, 2023	Champions Livestock Judging Camp C	Manhattan
June 21-24, 2023	K-State Animal Science Leadership Academy	Manhattan
June 30-July 1, 2023	Dr. Bob Hines Kansas Swine Classic	Manhattan
July 11, 2023	Cattle U Education Event	Manhattan
August 10, 2023	KLA/K-State Ranch Management Field Day	Mushrush Red Angus
August 17, 2023	KLA/K-State Ranch Management Field Day	Carpenter Cattle Co.
August 19-20, 2023	Livestock Sweepstakes	Manhattan
September 27-29, 2023	HACCP Workshop	Olathe, KS
September 28, 2023	K-State Beef Stocker Field Day	Manhattan
October 7, 2023	K-State ASI Family & Friends Reunion	Manhattan

What's New for Beef Cattle Producers

Management Minute- Justin Waggoner, Ph.D., Beef Systems Specialist

“Generations in the American Workforce”

There are approximately five generations currently in the American workforce. I would add that since farmers and ranchers don't often retire and the kids start doing chores at an early age there could possibly be up to six generations involved in the day to day activities of a farm or ranch. These generations are somewhat loosely defined across different sources as 1. WWI and WWII generation (born ~1901-1926); 2. Mature or silent generation (born ~1928-1945); 3. The Baby Boomers (born ~1946-1965); 4. Generation X (born ~1965-1980); 5. Millennials (born ~1980-2000); and 6. Generation Z or Centennials. All of these groups have defining characteristics, and ideals that make them unique. There is tremendous amount of differences between these generations, if we consider that Granddad may have been raised in a world with limited electrical conveniences, and the millennial grandson, has never experienced a world without computers or mobile hand-held communication devices. Have you given any consideration to the different age groups or generations that currently make up your workforce? Have you updated your policies, procedures or verbal expectations to include modern means of communication such as texting? For example, if a family member or an employee is going to be late is it acceptable to send a text. If it is a more formal organization, what about training materials? Millennials and the generation Z's (coming soon) likely prefer and are more engaged in something they can watch over printed material.

For more information, contact Justin Waggoner at jwaggon@ksu.edu

Feedlot Facts- Justin Waggoner, Ph.D., Beef Systems Specialist

“Let's Talk About Water”

Most cattle producers fully understand the importance of water. After all, providing an adequate supply of clean, fresh, water is the cornerstone of animal husbandry and there are very few things that compare to the feeling of finding thirsty cows grouped around a dry tank on hot day. Water is important, and in situations where the water supply is limited or we are forced to haul water one of the first questions we find ourselves asking is “how much water do those cows need”? The old rule of thumb is that cattle should consume 1-2 gallons of water per 100 lbs of bodyweight. Accurately determining the amount of water cows will voluntarily consume is difficult and is influenced by several factors (ambient temperature), moisture and salt content of the diet, body weight, lactation etc. Water consumption increases linearly as ambient temperature increases above 40° Fahrenheit such that cows require an additional gallon of water for every 10 degree increase in temperature. Additionally, lactation also directly increases the amount of water required by beef cows. The table below summarizes the daily water requirements of beef cows of several different body weights, milk production levels and ambient temperatures (Adapted from Spencer, 2016).

Cow weight, lb	Milk Production, lb/d	Average Daily Temperature, °F		
		40	65	90
1100	0	8.2	10.8	13.4
	10	10.5	13.1	15.7
	25	12.8	15.4	17.9
1300	0	9.2	11.8	14.3
	10	12.2	14.8	17.4
	25	14.5	17.1	19.7
1500	0	10.2	12.7	15.3
	10	14.0	16.5	19.1
	25	16.3	18.8	21.4

Water is important. The daily water requirements of beef cows in this article are estimates and water consumption varies greatly during the summer months when the temperatures exceed 90° Fahrenheit. Therefore, these recommendations are minimum guidelines. There are a number of excellent resources available on the web, regarding livestock water requirements and water site development.

For more information, contact Justin Waggoner at jwaggon@ksu.edu.

KSU Cow-Calf Checklist – June 2023

Management considerations for August 2023

By Jason M. Warner, Ph.D., Extension Cow-Calf Specialist

Cowherd Management

- For spring-calving cow herds:
 - Monitor BCS through late summer, particularly on young females.
 - Use the BCS Record Book from KSRE to record scores!
 - 2–4-year-old females and thin females will respond most to early-weaning.
 - If you plan to early-wean:
 - Develop your plan for feeding and marketing calves.
 - Prepare weaning/receiving pens and waterers in advance.
 - If feeding early-weaned calves, test your forages and have your ration plan and ingredients in place 2-3 weeks prior to weaning.
 - Schedule early pregnancy checking activities if not already done.
 - For managing cull cows, evaluate the cost of gain relative to the value of gain for marketing decisions.
- For late-summer and early-fall calving cowherds:
 - Evaluate cows for BCS and adjust your plan to ensure mature cows are ≥ 5.0 and 2–4-year-old females are ≥ 6.0 at calving.
 - The final 60 days prior to calving represents the last opportunity to add BCS economically.
 - Review your calving health protocols as needed.
 - Have calving equipment cleaned and available to use as needed.
- Closely manage free-choice salt and mineral programs through late summer.
 - Record date and amount of salt and mineral offered and calculate herd consumption on a pasture or group basis.
 - Adjust how you are offering product to cattle if needed to achieve target intake.
 - If consumption is 2X the target intake, then cost will be too!
- Continue to monitor bulls and their activity throughout the breeding season.
 - Monitor BCS, particularly on young bulls.
 - If bulls are $BCS \leq 5.0$ after breeding, consider supplementing to regain BCS going into fall.
 - Schedule breeding soundness exams for bulls used for fall service.

Calf Management

- If creep feeding calves, closely monitor intake and calf condition/fleshiness.
- Monitor calves for summer respiratory illness.
- Schedule any pre-weaning vaccination or processing activities.

General Management

- Evaluate grass growth and adjust your grazing plan as needed.
- Employ multiple strategies, chemistries for late-season fly/insect control.
- Begin taking inventory of harvested forages for fall feed needs.
 - Use the forage inventory calculator (<https://www.agmanager.info/hay-inventory-calculator>).
- If planning to harvest corn silage, prepare your pile/bunker site and equipment.
 - If using a custom harvester, communicate with them well in advance.
 - Closely monitor whole plant moisture levels.
 - Have silage tarps in place and ready to cover once harvest is complete.
- Use the Management Minder tool on KSUBeef.org to plan key management activities for your cowherd for the rest of the year.
- With high feeder calf prices, consider price risk management tools.
- Visit with your local FSA and extension office if you plan to utilize CRP acres for emergency forage use or for information on other assistance programs.

What's New for Beef Producers

↪ **Evaluation of Kansas Beef Consumers' Awareness and Understanding of Business-to-Consumer Marketing-** The objective of the study was to determine the understanding and knowledge level of consumers purchasing beef in a business-to-consumer (B2C) format within Kansas. A digital survey was created to evaluate consumers' familiarity and satisfaction of buying beef in a B2C format. The survey was made available for a two-week period to consumers utilizing the Shop Kansas Farms online social media group.

Results: Results of the survey showed 93% of consumers (n = 174) reported having previously purchased beef products from a local producer or locker. Of these, 63.1% reported that their most recent purchase was their first time purchasing in a B2C format and the same percentage of consumers had been purchasing beef in a B2C format for less than five years. The most common methods of purchasing beef in a B2C format were "portion cuts" (24.5%), followed by "quarter beef" (17.0%) and "half beef" (15.1%), or a combination of at least two of these methods (20.7%). Only 5.7% of consumers experienced challenges while purchasing beef in a B2C format, yet 100% of those consumers still intended to continue purchasing beef in this format. When consumers were given options that would be useful to prevent future complaints, the most selected response was "improved consumer knowledge." The consumers (n = 82) who rated this response as "very effective" or "extremely effective" indicated that "increased state extension resources" would be at least "moderately effective" (82.9%). This indicates that increased state extension resources would be an effective way to improve consumer knowledge.

The Bottom Line: Consumers within the state of Kansas are interested in and have positive experiences with purchasing beef in the B2C format. Moreover, most consumers are new consumers to buying beef in the B2C format, indicating that there is increasing demand for beef available for purchase in this format. Results of this study support this but show room for growth within consumer understanding of purchasing beef in a B2C format. Results of this study shows the opportunity for improvement of extension and other resources for consumers. More information is available on this experiment and others in the KSU Cattlemen's Day report at www.KSUbeef.org. For more information, contact Travis G. O'Quinn (785-532-3469 or travisquinn@ksu.edu) or A.J. Tarpoff (785-532-1255 or tarpoff@ksu.edu)

↪ **Effects of Almond Hull Inclusion on Growth Performance of Limit-Fed Growing Cattle-** The objective of this experiment was to evaluate the effects of almond hull inclusion and almond hull processing on growth performance of limit-fed growing beef cattle during a 56-day growing period. A total of 364 steers were assigned to one of four diets. The control diet contained (dry matter basis) 39.5% dry-rolled corn, 7.5% supplement, 40% wet-corn gluten feed, and 13% prairie hay. Almond hulls replaced prairie hay or prairie hay and dry-rolled corn and were fed at 13 and 26% of the diet, respectively. A subset of almond hulls was processed using a grinder mixer with no screen. Processed almond hulls replaced prairie hay and were fed at 13% of the diet. Diets were limit-fed for 56 days.

The Bottom Line: These data were interpreted to suggest almond hulls can be utilized as an alternative to prairie hay in limit-fed growing beef cattle diets while maintaining or slightly improving growth performance. More information is available on this experiment and others in the KSU Cattlemen's Day report at www.KSUbeef.org. For more information, contact Dale Blasi (785-532-5427 or dblasi@ksu.edu.)

↪ **Consumer Color and Discoloration Thresholds for Purchase of Retail Ground Beef When Evaluating Packages of a Single Day of Display-** This study utilized a simulated retail display to investigate the impact of ground beef color and discoloration on consumer purchase intent, while identifying the best objective measurements to predict consumer preferences of ground beef on the same day of retail display. For this study, 180 1-lb 80% lean/20% fat ground beef loaves were assigned to a specific day of retail display (day 0-9). Consumers (n = 318) and trained descriptive panelists assessed ground beef samples, with a single day of display evaluated per consumer group. Spectral data and L^* (lightness), a^* (redness), and b^* (yellowness) values were collected. Simple linear and logistic regressions were calculated for consumer ratings. Lastly, Pearson correlation coefficients were calculated for sensory and objective measurements.

The Bottom Line: Consumer intent to purchase ground beef at varying days of retail display can be predicted by the objective measures used in this study. Moving forward, these models can provide ground beef producers and retailers with an indication of potential consumer purchasing behaviors for ground beef at varying levels of discoloration to prevent waste and maximize profits. More information is available on this experiment and others in the KSU Cattlemen's Day report at www.KSUbeef.org. For more information, contact Travis G. O'Quinn (785-532-3469 or travisquinn@ksu.edu) or Liz Boyle (785-532-1247 or lboyle@ksu.edu.)

What's New for Swine Producers

- ↪ **Effects of Replacing Lactose with Novel Carbohydrate Sources on Nursery Pig Growth Performance-** This experiment was conducted to determine the effects of replacing lactose in Phase 1 and 2 nursery pig diets with 1 of 2 novel carbohydrate (CHO) products (CHO-D and CHO-L; Cargill Starches, Sweeteners, & Texturizers, Blair, NE) on growth performance and fecal dry matter. A total of 360 barrows (DNA 200 × 400; initially 13.2 ± 0.10 lb) were used in a 42-d growth trial. Pigs were weaned at approximately 21 d of age, randomly allotted to pens in 1 of 2 weight blocks based on initial BW (initially 12.0 and 14.5 lb), and then allotted to 1 of 6 dietary treatments in a completely randomized design. There were 5 pigs per pen and 12 pens per treatment across 2 barns. Dietary treatments were corn-soybean meal-based with 5 to 7.5% DDGS and included: 1) negative control (NC; containing 0.08 and 0.04% lactose, phase 1 and 2, respectively); 2) positive control (PC; containing 10 and 5% lactose, phase 1 and 2, respectively); 3) 50% of lactose replaced with the dry novel CHO (50% CHO-D; containing 5 and 2.5% lactose, phase 1 and 2, respectively); 4) 100% of lactose replaced with CHO-D (100% CHO-D; containing 0.09 and 0.05% lactose, phase 1 and 2 respectively); 5) 50% of lactose replaced with the liquid novel CHO (50% CHO-L; containing 5 and 2.5% lactose, phase 1 and 2, respectively); or 6) 100% of lactose replaced with CHO-L (100% CHO-L; containing 0.09 and 0.05% lactose, phase 1 and 2, respectively). Treatment diets were formulated in two dietary phases and fed from d 0 to 10 and d 10 to 24, respectively, with a common phase 3 diet fed for the remainder of the study. During the treatment period (d 0 to 24) there was a weight block × CHO source interaction ($P = 0.045$) on ADFI, in which heavyweight pigs fed the PC diet had greater ($P = 0.001$) ADFI than lightweight pigs fed the same diet, while there was no significant difference due to weight block among any other CHO sources. Furthermore, overall (d 0 to 42) there was a tendency for a weight block × CHO source interaction ($P = 0.067$) on ADFI. Additionally, pigs in the heavyweight block had greater ($P \leq 0.001$) BW, ADG, and ADFI compared to pigs in the lightweight block throughout the experiment. However, overall, pigs from the lightweight block had improved ($P = 0.033$) feed efficiency compared to pigs in the heavyweight block. There was a tendency for a main effect of CHO source ($P = 0.057$) on feed efficiency during the treatment period, in which pigs fed the NC diet had the lowest numeric F/G and pigs fed the 100% CHO-L diet had the highest numeric F/G. However, this did not persist throughout the overall study ($P = 0.329$). Additionally, there was no observed main effect of CHO source ($P > 0.100$) on ADG or ADFI throughout the overall study. In summary, feeding either of the novel CHO sources did not significantly affect growth performance, percentage of pigs that lost weight post-weaning, or fecal dry matter during nursery period compared with those pigs fed a traditional lactose source or a diet that did not contain any lactose. Based on the results herein, pigs fed diets containing either novel CHO product had equivalent performance to those on the PC treatment, but we were unable to detect incremental value as the PC treatment did not significantly differ from the NC treatment. More information is available on this experiment and others in the KSU Swine Day report at www.KSUSwine.org. (This study conducted by Rafe Q. Royall, Jason C. Woodworth, Mike D. Tokach, Joel M. DeRouchey, Jordan T. Gebhardt, Robert D. Goodband, Keith Mertz, and John F. Patience.)
- ↪ **Influence of Protein Source on Growth Performance in Nursery Pigs-** A total of 330 pigs (241 × 600, DNA; initially 10.7 lb) were used to determine the influence of dietary protein source on growth performance in nursery pigs. At weaning, pigs were randomly allotted to 1 of 6 dietary treatments with 4 or 5 pigs per pen and 12 replications per treatment. Dietary treatments were arranged in a one-way treatment structure with diets containing different protein sources; enzymatically treated soybean meal (HP 300; Hamlet Protein, Findlay, OH), spray-dried bovine plasma (APC Corp, Ankeny, IA), fermented soybean meal (ME-PRO; Prairie Aquatech, Brookings, SD) with or without fish solubles (TASA, Lima, Peru), fish meal (TASA Prime meal; TASA, Lima, Peru), and custom-made fish meal (TASA Swine; TASA, Lima, Peru). Because of a delay in arrival of the fish meal source, all pigs were placed on a common phase 1 diet for 3 d after weaning. On d 3, all feeders were weighed, dumped, and refilled with experimental diets. Pigs were fed experimental phase 1 diets for 9 d (d 3 to 12) followed by phase 2 diets for 15 d. Following phase 2, all pigs were fed a common diet for an additional 15 d. In all weigh periods and overall, there were no significant differences between treatments for BW, ADG, ADFI, and F/G. For economic analysis (d 0 to 40), pigs fed spray-dried bovine plasma had the greatest ($P \leq 0.001$) feed cost and feed cost per lb of gain compared to all other treatments. There were no differences in revenue or IOFC between treatments. In summary, utilizing alternative protein sources in phase 1 and 2 nursery pigs' diets had no effect on growth performance. However, there was a 5 to 7% improvement in ADG for pigs fed spray-dried bovine plasma and custom-made fish meal. More information is available on this experiment and others in the KSU Swine Day report at www.KSUSwine.org. (This study conducted by Ethan B. Stas, Mike D. Tokach, Robert D. Goodband, Jason C. Woodworth, Joel M. DeRouchey, and Jordan T. Gebhardt.)

What's New for Dairy Producers

☞ **Association of anogenital distance and antral follicle count in Holstein heifers** – Indirect traits that are easily measured, highly repeatable, and collected at a low cost will help to enhance dairy cattle fertility. A good example of these traits are Anogenital distance (**AGD**; Defined as the distance from the center of the anus to the clitoris) and antral follicle count (**AFC**; Defined as the number of antral follicles (>2 mm) in the two ovaries). AGD and AFC have been proposed as a biomarker for cattle selection based on their favorable relationship with fertility. Although both traits are influenced by androgen concentrations during gestation, an association between the two of them remains to be elucidated. Thus, the aim of this study was to characterize the association of AGD with AFC in Holstein heifers. This study comprised 633 nulliparous Holstein heifers between 12 and 13 months of age from a commercial heifer yard located in Kansas. Heifers were restrained on feed bunk headlocks, and a single measurement of AGD (center of the anus to the base of the clitoris) was taken with a stainless caliper. Subsequently, transrectal ultrasound was conducted to record a video of each ovary and count the number of follicles (≥ 2 mm in diameter). Data was organized in a spreadsheet, and statistical analysis was performed with PROC MIXED on SAS version 9.4. Statistical differences were considered at $P < 0.05$. According to our results, the hypothesis was supported that AGD and AFC are associated ($P < 0.01$). Nonetheless, the association was positive, which means that as AGD increases, AFC also increases. Regardless of this association, the portion of the AFC that can be explained by AGD is low ($R^2 = 0.108$).

The Bottom Line: The positive association between AGD and AFC in our results supports previous studies in which androgens increased AGD or AFC. However, further research is warranted to check if greater AGD and greater AFC are both positively related to fertility in this Holstein heifer population since previous research has shown a negative association between AGD and fertility in cattle. (*This study was conducted by Andréia Ferreira Machado, Kerrie A. Mick, Santiago P. Hurtado, João Victor Chavez, Simone Guimarães, José Domingos Guimarães, Leticia P. Sanglard, and Victor E. Gomez-Leon [vgomezleon@ksu.edu]*).

☞ **Phenotypic and genetic relationships among anogenital distance, Anti-Müllerian hormone, and in vitro embryo production in dairy cattle** – Anti-Müllerian hormone (**AMH**) concentration and antral follicle count (**AFC**) are phenotypic traits associated with *in vitro* embryo production in cattle. However, assessment of AMH and AFC requires collecting blood samples and conducting an assay or an ultrasound exam, respectively, which could potentially make it challenging to be obtained on commercial operations. More recently, anogenital distance (**AGD**; Defined as the distance from the center of the anus to the clitoris) has been proposed as a proxy for fertility in dairy cattle that is easy to collect at a low cost. The aim of the present study was to characterize the AGD and its phenotypic and genetic associations with AMH and *in vitro* embryo production records in *Bos indicus* dairy cattle Gyr. From July to December 2021, a single morphometrical measurement of AGD was collected in 552 donors from 6 herds in Brazil. A subset of donors ($n = 184$) had AMH assayed. A total of 4,785 ovum pick-up events were retrieved, and a raw average was calculated for each individual donor's number of recovered oocytes, viable oocytes, produced embryos, viability rate, and blastocyst rate. The phenotypic association between AMH, AFC, and AGD was performed in SAS software. The genetic correlation between these traits was performed using the BLUPF90 family programs. The AGD ($128.7 \text{ mm} \pm 14$; Mean \pm SD) had a normal distribution and was highly variable among the Gyr population. Our experimental hypothesis was partially supported by a phenotypic trend of an association for a greater number of recovered oocytes ($R^2 = 0.008$; $P = 0.1$) and produced embryos ($R^2 = 0.004$; $P = 0.06$) as AGD decreased. Our results failed to support an increase in AMH concentration along with a decrease in AGD ($R^2 = 0.0007$; $P = 0.45$). In addition, positive genetic correlations were observed between AGD and recovered oocytes ($r = 0.18$), viable oocytes ($r = 0.22$), produced embryos ($r = 0.27$), and blastocyst rate ($r = 0.19$). When classified into categories, a greater ($P < 0.001$) number of viable oocytes and embryos were observed in donors in the High ($0.69 \pm 0.02 \text{ ng/mL}$) vs Low ($0.25 \pm 0.01 \text{ ng/mL}$) AMH category and High ($34.83 \pm 1.60 \text{ ng/mL}$) vs Low ($16.17 \pm 0.56 \text{ ng/mL}$) recovered oocytes categories, but no differences were observed in the AGD categories. Moreover, the AGD heritability was estimated to be moderate (0.5) in the current population.

The Bottom Line: In *Bos indicus* dairy cattle Gyr, anogenital distance tended to be phenotypically inversely associated with quantity-related traits such as the number of recovered oocytes and produced embryos. In contrast, anogenital distance tended to be genetically positively correlated with qualitative-related traits such as viable oocytes and blastocyst rates. The weak phenotypic associations and slightly stronger genetic correlations of anogenital distance with *in vitro* embryo production associated with the high heritability of anogenital distance suggest that anogenital distance could potentially be a proxy trait to be included as a genetic selection criterion to indirectly improve fertility in Gyr dairy cattle. Further studies should be performed to validate these retrospective analyses and to better understand the association between anogenital distance and *in vitro* embryo production. (*This study was conducted by Andréia Ferreira Machado, Simone E. Facioni Guimarães, Domingos Lollobrigida de S. Netto, José Domingos Guimarães, Ciro A. Alves Torres, Leticia P. Sanglard, and Victor E. Gomez-Leon [vgomezleon@ksu.edu]*).

ASI FACULTY SPOTLIGHT...



A.J. Tarpoff (tarpoff@ksu.edu; 785-532-1255)
**Associate Professor/Beef Extension Veterinarian, Beef Cattle
Production Medicine**

Dr. A.J. Tarpoff has worked and served the beef industry from every aspect of production from pasture to plate. He attended Kansas State University earning his B.S. from the Animal Sciences and Industry department, followed by his D.V.M., and M.S. degrees from the College of Veterinary Medicine. Following Graduation in 2012, he practiced feedlot production medicine in Alberta, Canada. In 2016 he returned to the Department of Animal Sciences and Industry at Kansas State University and currently serves as an Associate Professor and the Beef Extension Veterinarian. A.J. has a 70% extension, 20% research, and 10% teaching appointment. He works closely with producers, practicing veterinarians, and members of industry to bring relevant extension and education that improves cattle health and the productivity of the beef industry. A.J. and his wife, Esther live near Westmoreland Kansas.



Karol Fike (karol@ksu.edu; 785-532-1104)
Teaching Professor

Karol Fike was raised on a diversified crop and livestock (beef cattle and sheep) operation in eastern Iowa. She completed her B.S. degree in Animal Sciences at Iowa State University in 1991. Karol continued her education at the University of Nebraska-Lincoln, earning her M.S. and Ph.D. studying reproductive physiology in beef cattle. Karol has a passion for teaching and working with students. She taught courses in Anatomy and Physiology, Human Nutrition, and Biology at Western Iowa Tech Community College. She spent four years as faculty at Ohio State University teaching Introductory Animal Sciences, Animal Products, advising students, and coordinating the undergraduate internship program. Here at K-State, Dr. Fike advises students, teaches Farm Animal Reproduction (ASI 400), Animal Sciences Career Preparations (ASI 480), Physiology of Reproduction in Farm Animals (ASI 710), and she coordinates the departmental internship program (ASI 599). She also provides leadership to the K-State undergraduate Feedlot Boot Camp and Teaching Program and animal sciences quadrathlon competition. Her research interests include beef cattle reproductive physiology and management and evaluation of factors affecting sale price of beef calves marketed via video auction. Karol and her husband Gary have three children; Jackson, Marshall and Grace. They have a few cows on their acreage near Westmoreland, Kansas.

*We need your input! If you have any suggestions or comments on **News from KSU Animal Sciences**, please let us know by email to katiesmith@ksu.edu*